roofing are generally made with tongues in grooves set in cement, covered by ribs; but it is difficult to make a joint that will stand, on account of the material swelling and shrinking like glass: at all events, it is disturbed by the slightest settlement. Attempts to remedy this disadvantage were exhibited in Taaffe's patent, and in the so-called improvement on the same, by Russell, in both of which the principle of T cramps and screws, or nails, with zinc gutters under each line of junction of the slate, is adopted. No arrangement, however, appears to me so good as that of lead drawn in grooves, and covered by ribs set in putty on the slates, screwed down to the rafters; as no gutters are required, and holes in the slate are avoided as much as is possible. The patent slate ridges and hips seemed well contrived. It will be seen that I place no reliance on constructions of iron and slate, except under shelter, or in very peculiar circumstances.

Passing for the present the imitations of marbles, we may notice those of stones. Ransomes' patent stone differs from cements and other artificial stone in the employment of silica, both as the base and the combining material. It may be regarded as a collection of particles intimately combined with silicate of soda, by which they are held together as by a kind of glass. Another manufacture consisted of an admixture of caustic carbonate of lime (with or without magnesia), and silica in a gelatinous state, which produced a hydrous silicate of lime as a result. The largest collection in illustration of this branch was shown by White and Sons, and was divided into two classes—the natural and the artificial. The first consisted of Sheppey stone, and nodules dredged up off Harwich, from which respectively are obtained the varieties of the article known as Roman cement, introduced by Dr. Parker about fifty years ago. These stones, as well as those from Christchurch and Romsey, which yield the Medina cement, are found among the older tertiary deposits. The Whitby stone is found in the lias formation, and gives the cement, known as Atkinson's. At Wolverhampton and in Derbyshire, cement stones occur in connection with iron stone, which imparts to them a ferruginous tint. Other districts yield natural cement stones; but the above-mentioned are those which are best known in commerce, being extensively used both for mortars and stucco. The name of Greaves is intimately connected with that of blue lias lime; and this material was abundantly represented in the Exhibition. The artificial cements, composed of a mixture of carbonate of lime and argillaceous earths calcined together, were chiefly represented by the so-called Portland cements, furnished by White and Sons, and by Robins, Aspdin, and Co. The first-named firm exhibited the celebrated brick beam, and specimens of concrete, consisting of one part of cement to ten of gravel: the second showed several instances of tests of strength of the cement, pure and mixed with sand; but as some of the statements made since the exposition vary considerably from those which I noted, I have put them aside. The inutility of the experiments, made with much parade on Portland and Roman cements, is apparent when we consider that a single trial, under complicated conditions, can never be taken as affording a quotient for use as a constant in calculation, and that we have had no series of experiments made by rival manufacturers on the same day and in the same place and manner; and that, moreover, the results so obtained can only show the properties of the best materials supplied by the manufacturer, while no architect can tell with certainty on every occasion what cement the workman uses. Hamelin's mastic seemed to be wholly unrepresented or forgotten. I do not exactly know where to place what was called "cement-stone," a limestone believed to be the basis of Peel Castle mortar; a cement made from the "curl-stone," found at Coal Port; Dyer's patent metallic cement; Furze's fusible mineral cement; Orsi and Armani's patent metallic lava, nor Spence's patent zinc cement. The latter should be inexpensive, as it is manufactured entirely from refuse matters. Among the British possessions, New Zealand sent a Roman cement stone; and France two hydraulic limes. It was said that by the process of M. Henri de Villeneuve, engineer, a superior hydraulic lime might be obtained from all carbonates of lime, without the addition of other substances, and that the cement exhibited possessed different degrees of rapidity in setting. Belgium also sent a hydrofuge stucco, or plaster; Holland a hydraulic cement; and Wurtemburg, "a hydraulic chalk cement, hardening under water in a few minutes." Portugal presented hydraulic clays from the Azores, and hydraulic scoriæ, by which, with the addition of lime, "a hydraulic bitumen, called Argamassa cement," is produced. From Prussia, we received a "Roman cement," being an argillaceous carbonate of lime with magnesia: the double silicate may probably be of very great solidity. Ant. Peppini of Florence displayed some neat octagon paving squares, "in cement, called Calcarea." The renowned Roman hydraulic cement is said to have been made of a mixture of volcanic sand and lime. I did not notice pozzolana from the Papal States, Tuscany, or Naples, although I believe there were specimens. Greece sent a box of this volcanic earth (a silicate of magnesia?) from Santorin, which was ash-coloured, and said to have the same qualities as the Italian: mixed with lime it solidifies and sinks in water. A considerable quantity is exported annually to Turkey and Trieste. Spain also claimed to exhibit this material, but gave it the alias of soapstone of Somontin. The United States also sent steatite, or hydrated silicate of magnesia, combined with a little alumina and oxide of iron: its peculiar greasy feel has been the origin of the name of soapstone. It is much more abundant, and more extensively used in America than in England; and being almost as readily worked as the soft woods, and with similar tools, it is applied to many purposes for which its superior durability renders it preferable, as baths and the jambs of fireplaces; and it is used in Switzerland for stoves of superior quality. Large beds of the pure material are found in the English possessions in Canada. The terms, mortar, stucco, and cement are at present so indiscriminately employed as to cause considerable confusion, and a strong feeling of the necessity of some authoritative scientific lexicon. I shall pass a few specimens exhibited, for the third great division of imitative stones. Gypsum, or hydrous sulphate of lime, called alabaster when in a semi-crystalline form, and selenite when in crystals, being heated from 250° to 275° Faht., becomes an anhydrous sulphate, and, reduced to a fine powder, furnishes the plaster of Paris of commerce. The peculiar stone obtained from the tertiary deposits of the Paris basin contains above 7½ per cent. carbonate of lime, and 3 per cent. of clay, which so greatly improves the cement as to have given the peculiar name to the preparation in other countries. The genuine article from Paris was submitted, as well as supplies from Ireland and Canada. The English sources are chiefly in Derbyshire, Nottinghamshire, and Cumberland; and when combined with alum, the products are the hard artificial cements known as Keen's and Parian patent cement. The effect of the last, vitrified, is exceedingly good. Gypsum is also understood to be the basis of Martin's cement. Of these rivals, we shall all recollect the handsome specimens which were exhibited. It will hardly be supposed, that of all foreign nations Tunis supplied nearly the most interesting examples of this material. The wall decoration, closely resembling that of the Alhambra, hardly seemed to be a cast, and was remarkable for the way in which the top surfaces were modelled so as to be relieved easily from the mould, and to show to advantage either on a level with, or above the eye. Spain sent an original piece of the Alhambra wall decoration; and Don Rafael Contreras, of Aranjuez, exhibited a portion of his copy of all the Alhambra work of this kind in the same material, one quarter of the real size: such a collection has rarely, if ever, been formed.

We may divide the subject of coloured glass into four modes of manufacture, viz.,—stained, or flashed; solid, or pot; enamelled; and etched glass. Without touching, it was very difficult to decide how some specimens were executed: those by Chance and Co. obtained my highest approbation for the quality, too often lost, of lucidity; and I think they consisted chiefly of flashed glass, cut, where requisite, to produce the lights. The specimens by Hall and Sons were also very satisfactory. I noticed no foreign glass of this sort. Hedgland, Hardman, and Co. and Gaunt exhibited works in the antique style; and I observed a window from a very clever design by T. T. Bury. The Belgian and French were single specimens of the second division of manufacture: the latter, consisting of works for Ely Cathedral, by Gerente, seemed poor and ineffective. The work by Toms appeared very good in taste and execution; and I must group together here the names of Ballantyne, Claudet, Hetley, and Wailes, with one exhibitor from Austria. All these seemed to present a third class of work, partly stained and partly painted glass. The enamel school, I think, included Messrs. Baillie, Bland, Gibbs, Gibson and Toby, the St. Helen's Co. (whose taste I question), two clever examples from Austria, one from Saxony, a good specimen from Holland, and five from France, of which I can say nothing favourable, but that No. 229 was perfectly a picture, and that Lasson's work contained a beautiful female figure, and was in all respects more in accordance with our notions of glass-work. The American glass, as white glass, appeared to me to be, without exception, the finest that I had ever seen for material, but very badly manufactured. The numerous varieties of glass decorated with opaque patterns, embossed or marbled, differed in no respect from that which we see daily advertised. Chance and Hartley stood pre-eminent for their window glass. The French glass, the Belgian, and the Prussian followed in the order of merit in which they are mentioned: the Bavarian was indifferent. Glass tubing seemed to have attracted much attention, both in Holland and in England: metallic joints seemed generally to be contemplated, but I apprehend that the recent introduction of vulcanized india-rubber to form the joints of iron pipes, is equally applicable to those of lead, terra-cotta, stone ware, and glass. Except Swinburne's glass domes, I did not observe any glass for ordinary use, as tiles in roofs, on the English side. France sent some, 15 inches by 9 inches, under the name of Francis Fox, with terra-cotta tiles, 14 inches by 9 inches. Prussia sent glass-tiles and pantiles; and Brunswick exhibited glass tiles, very good glass slates, and excellent lace glass. Before quitting the subject, it may be remarked, that the artists of the Mediæval ages, being much more moderate in their demands upon their material, were more primitive, and, perhaps, more successful than their modern rivals in the effect produced, while their successors have certainly advanced in an artistic point of view, but at the expense of transparency, breadth, and simplicity. As a general rule, the modern works are too much paintings, in the strict sense of the word, too opaque in their shadows,—in fact, too much shaded; whereas painting on glass, to be really effective, should be almost entirely outline and colour, and as free from non-transparent shading as possible, for this becomes a sort of neutral tint when opposed to the light; hence the muddy character of much modern glass. I think it must be borne in mind that a stained glass window is a means of admitting modified and tempered light into a building—hence it must be transparent; that the picture is to be seen from a distance, generally considerable—hence that boldness, breadth, and harmony are more favourable to its effect than minute detail; and lastly, that the artist is not producing a work for isolated exhibition, but is labouring in combination with the architect of the edifice which he is to adorn, and with which his work is expected to harmonise, not to jar and contrast by painful and violent effects of light and shade; in short, that the window ought never to lose for an instant its character as a window, that is, a means of admitting light, which is its absolute

For more information on PDF Compression and OCR visit ThePaperlessOffice.org